Hinsdale-Brattleboro Bridge

Contractor's Perspective

Presented by:
Dustin Littlefield
Reed & Reed, Inc.

Project Overview

- $63.7M Final Contract (+4% from bid)
- 3+ Year Duration(Sept 2021- Dec 2024)
- 1,800 LF / 8 Spans / 7 River Piers
- 1,300 LF Temp Access Trestle

Scope Highlights

- Improved Alignment – Avoids “Malfunction Junction”
- MSE Walls and VT Rt. 142 Reconstruction
- Upgraded Utility Infrastructure
- New Boat Ramp for the Town of Hinsdale, NH
- Demolition of Existing Buildings

Key Quantities

- 12,000 LF of 30” x 1” Pipe Pile
- Over 12,000 CY of concrete
- 2,900 tons of Structural Steel
- 900 tons of Rebar

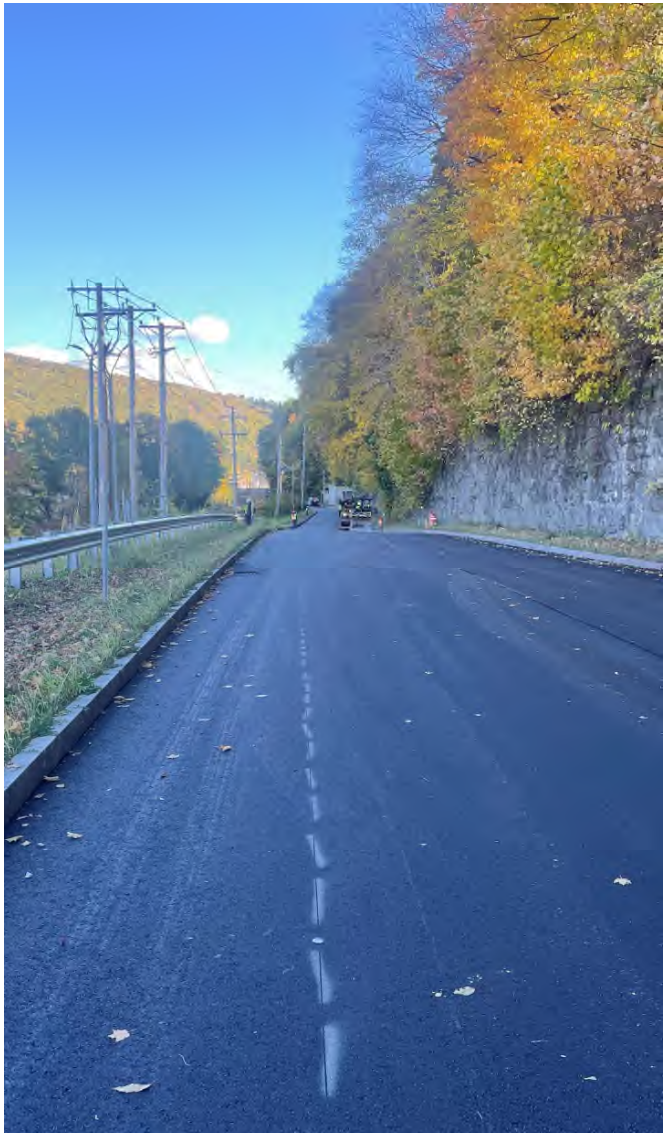

REED & REED

Heavy Lift Operations – Critical Lifts

- Up to 1,065-ton lifting capacity
- Paired girder lifts
- Challenging river work


Manitowoc
REED & REED


JLG LIFT



Lessons Learned, Project Challenges & Successes

- Utilities
- Permits
- Right of Way
- Coordinating Project Drawings
- Project Management & Contract Administration
- FRP Drains & Pipe
- Closed Drain System
- Substructure Piling Challenges
- Precast Deck Panels on Curved Girders
- The River
- Collaboration
- Project Completion

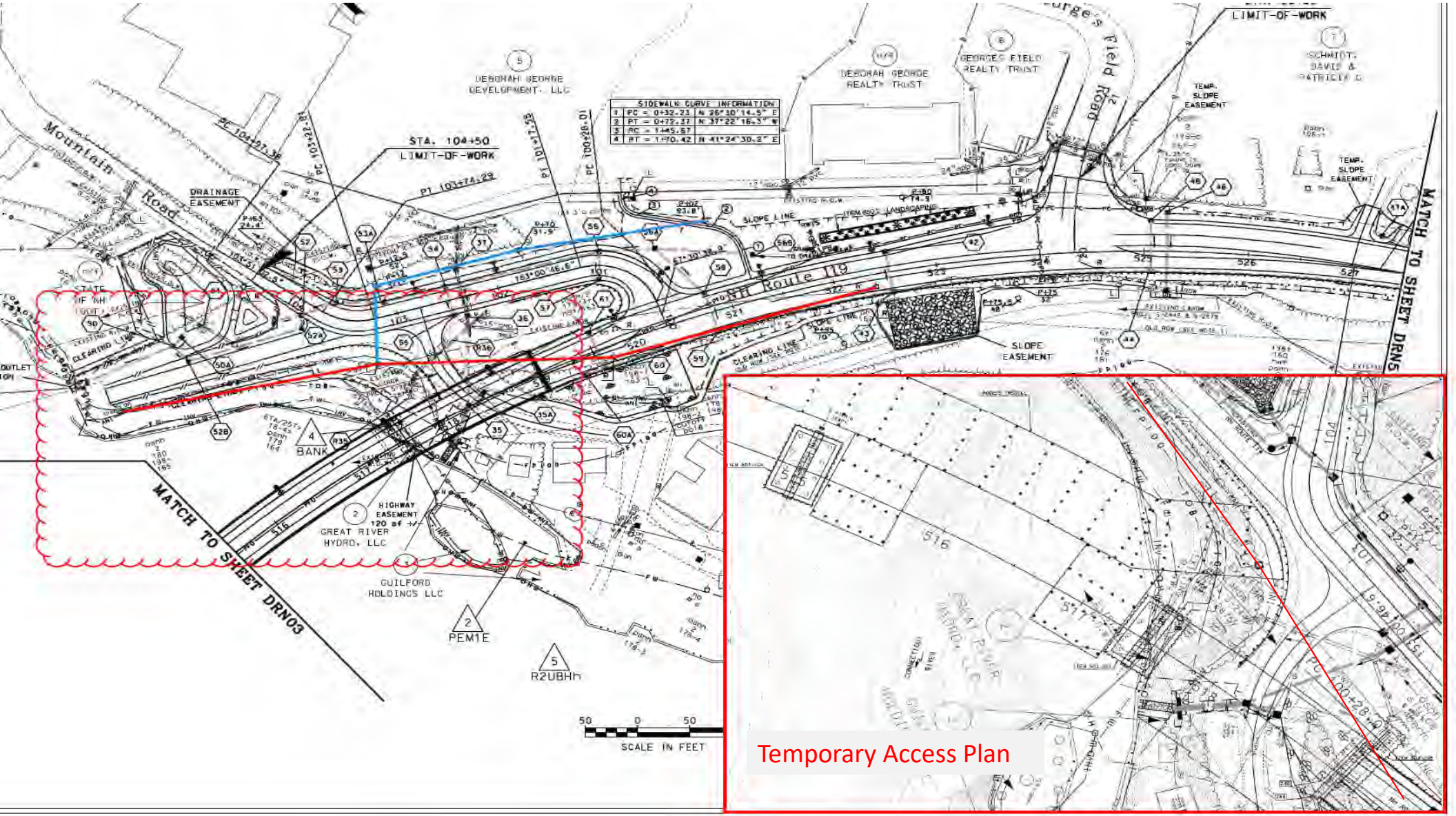
Utility Challenges

Issue:

- Relocation not complete ahead of construction
- Utilities within work zones

Impact:

- Delay temp access and critical work
- Increased hazards and inefficiencies


Temporary Access Plan
LIMIT-OF-WORK
STA. 104+50
LIMIT-OF-WORK
DEBORAH GEORGE DEVELOPMENT, LLC
DEBORAH GEORGE REALTY TRUST
GEORGE'S FIELD REALTY TRUST
SCHMIDT, DAVID & PATRICIA G.
TEMP. SLOPE EASEMENT
TEMP. SLOPE EASEMENT
DRAINAGE EASEMENT
Mountain Road
NH Route 119
SLOPE EASEMENT
MATCH TO SHEET DRN05
MATCH TO SHEET DRN03
STATE OF NH
BANK
HIGHWAY EASEMENT 120 sf +/-
GREAT RIVER HYDRO, LLC
GUILFORD HOLDINGS LLC
PEM1E
R2UBHh
SCALE IN FEET
SIDEWALK CURVE INFORMATION
1 PC = 0+32.23 N 26°30'14.5" E
2 PT = 0+72.27 N 37°22'16.3" W
3 RC = 1445.67
4 PT = 1+70.42 N 41°24'30.2" E

- Cofferdam install prolonged
- Shifted Temp. Access alignment
- Start of Temporary Access delayed

Takeaway: Negotiate & perform utility moves ahead of mobilization

Permitting Challenges

- Are permits current?
- “Dewatering” requirements fit application?
- Contaminated Soils

Takeaway: Permit language should reflect site conditions and realistic construction methods

Right of Way:

Ensure Agreements Have Timelines and/or Damages

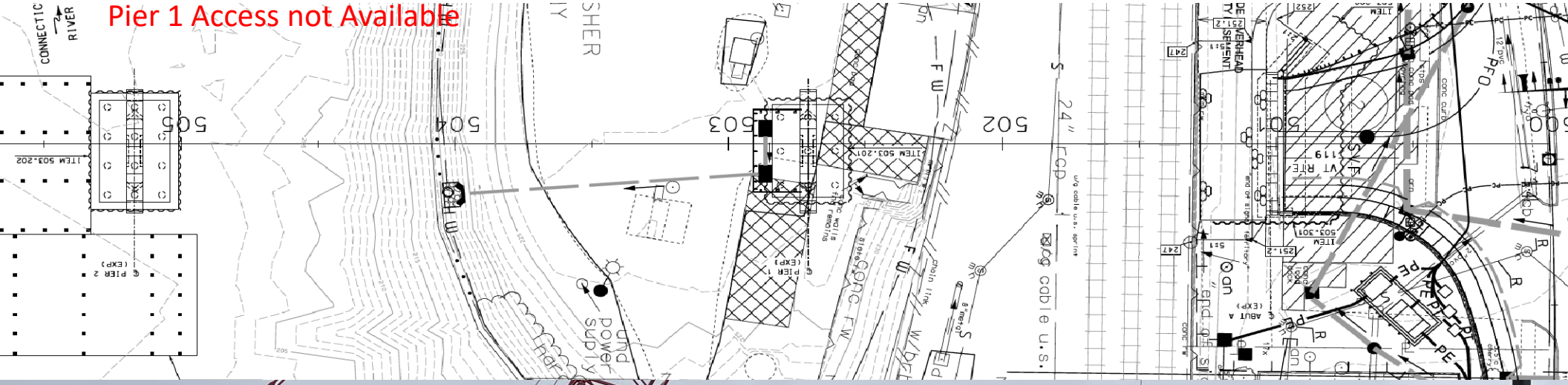
Pier 1 Access

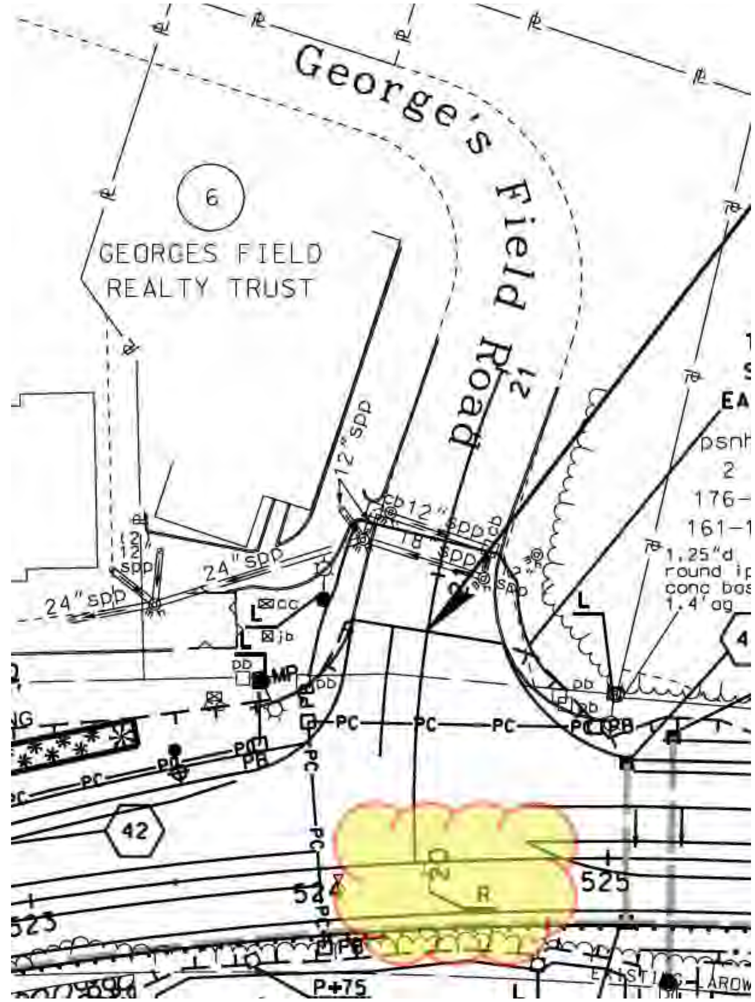
- Barrows & Fisher new fuel infrastructure near complete upon mobilization Sept. ‘21
- Special Provisions allow access by April 1, 2022
- Completion, Commissioning & Demo dragged on for 18 months following April 1 deadline
- Access granted late October 23, 2023
- Presumably no provisions in VT ROW agreement to address delays
- Substantial schedule & cost risk for Dept.

George’s Field Signal

- Slated for removal in contract documents
- No restrictions for when it could be removed by the contractor
- Permission to remove kicked down the road
- Ultimately went to court
- Relocated…Not removed

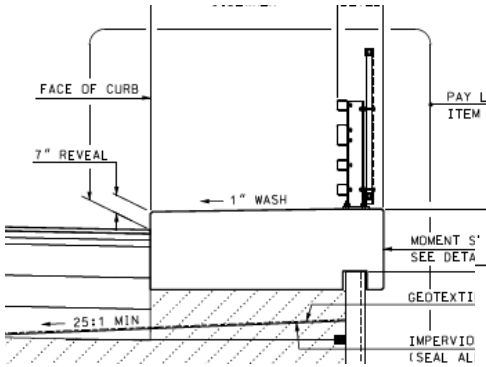
Pier 1 Access not Available

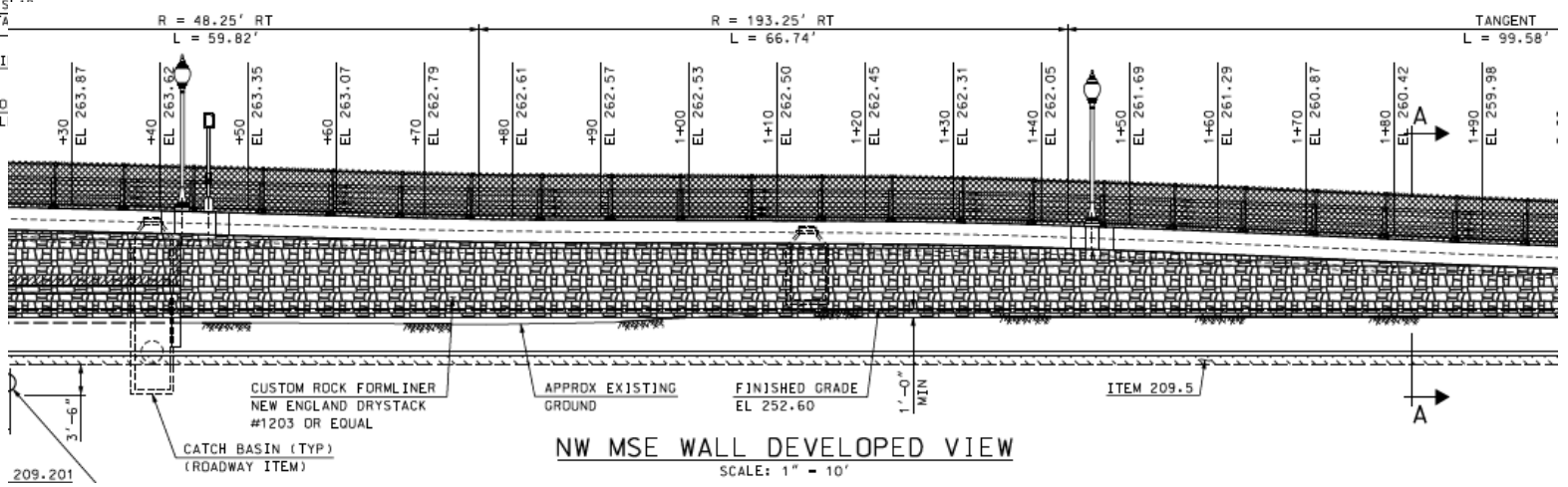



George's Field Road
6
GEORGES FIELD
REALTY TRUST
12"spp
24"spp
24"spp
12"spp
18"spp
42
523
525
PC
P+75

Coordinate Documents

- Ensure elevations are coordinated between Civil & Bridge plans
- Construction Sequence
- Aesthetics






IG90
DOOSAN

Project Management & Contract Administration

- Project Manager did not bid the project
- Subcontract Administration
- Timely Lower Tier Subcontractor submission

Fiberglass Drains & Pipe

- Development of Special Provisions
- Testing requirements
- Single Source Vendor
- Overpriced
- Variance of Special Provision
- Constructability

Closed Drain System

Original Design:

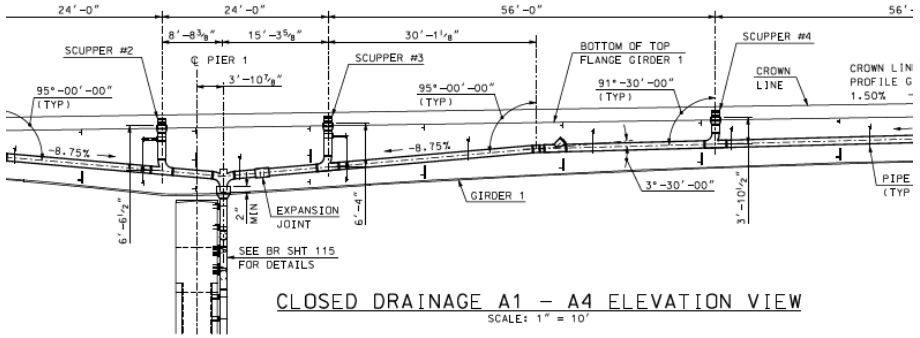
- Multi-component system discharging to river

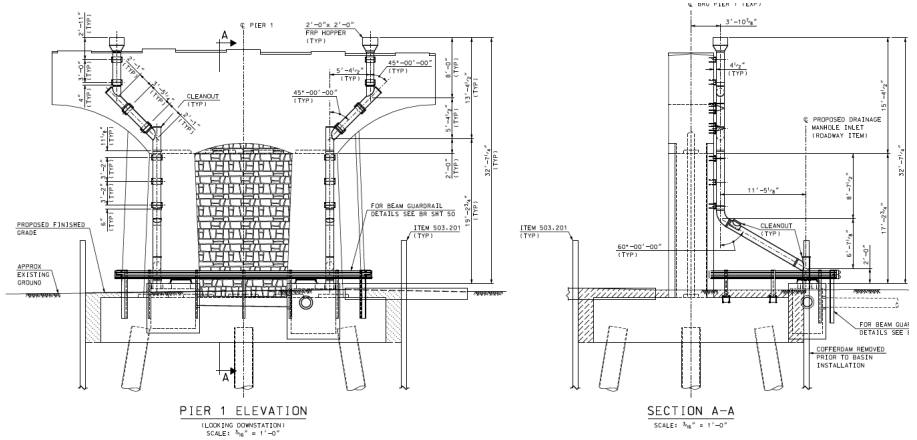
What Changed:

- Redesigned to eliminate underground components
- Fabrication already complete

Impact:

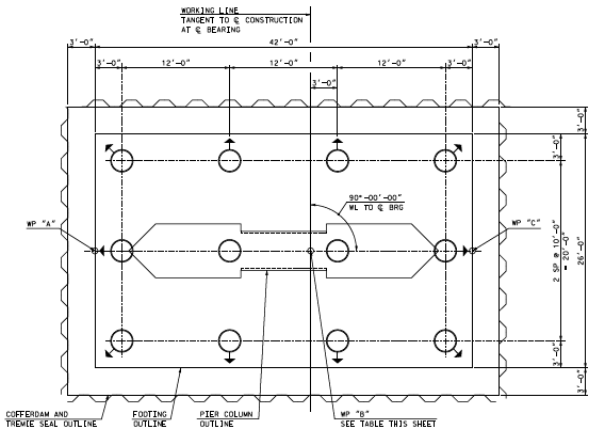
- Added cost
- Avoided potential environmental impact





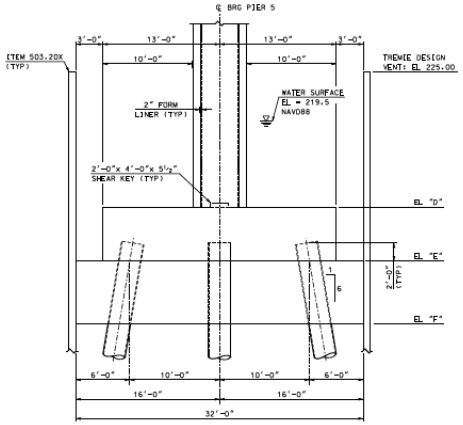
Substructure Pile Challenges

- Heavy 1” Wall Pipe – Spliced in Place
- 4 hrs. per splice with 7 passes
- Battered all Directions – Phased Installation
- Cleanout to 80’ – Multiple Methods



PIER 2, 5, 6, & 7 PIPE PILE LAYOUT PLAN

SCALE: 3/16" = 1'-0"

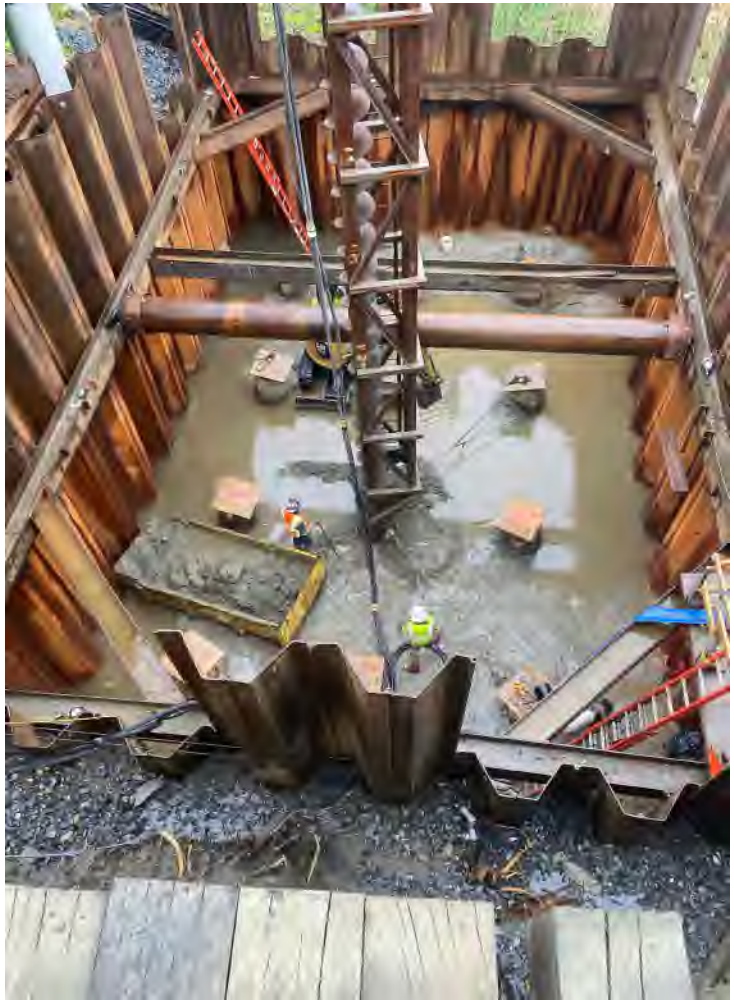


SECTION A-A

(PIER 5 SHOWN, OTHER PIERS SIMILAR)

SCALE: 3/16" = 1'-0"

Battered Pile Conflicts

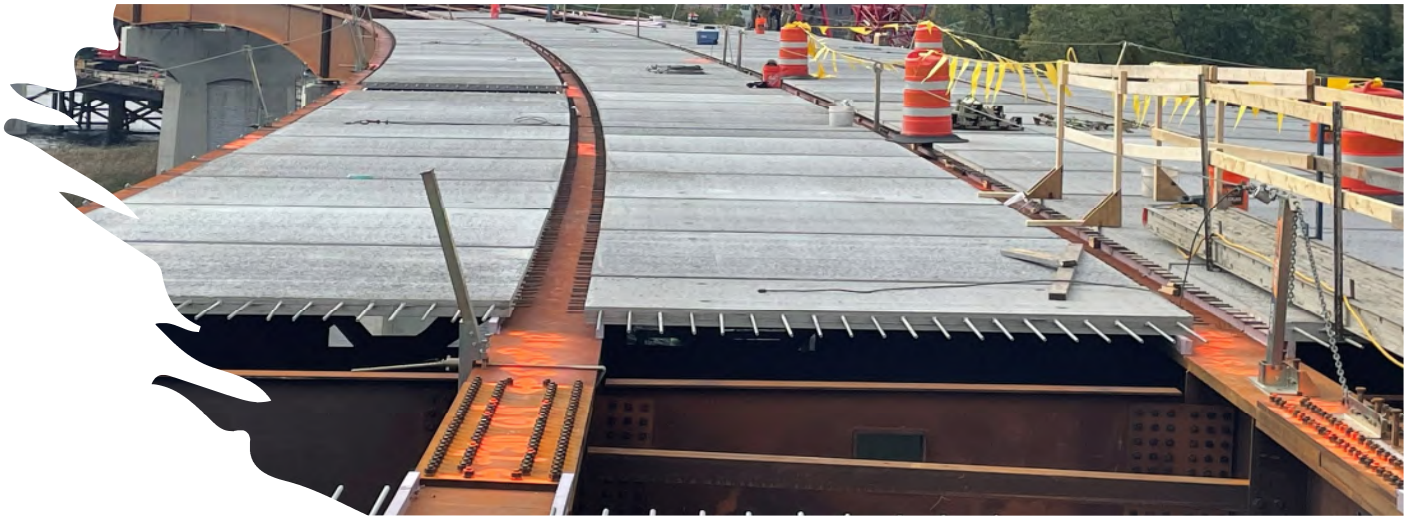


Multiple Cleanout Methods: Auger w/ Flighting, Air Lift, Soilmec Auger

Precast Deck Panels – Curved Girders

What Happened:

- Panel movement due to girder behavior (thermal effects)
- Large blocking heights increased instability



Impact:

- Inefficient Installation
- Increased Safety Risk
- Added Cost

Resolution:

- Changed Blocking Foam
- Secured Panels
- Shorter Grout Pours

Takeaway:

- Panel stability & constructability considerations for curved girders

Challenging River Variables – Seal Event

What Happened:

- High Water During Pour
- Abrupt Flow Changes After Pour
- Unexpected Elev. Gain ~ + 3’

Observations:

- Seal “Floated”
- Perfectly Flat…That’s Odd!
- Seal Sounded Hollow & Conc. Soft
- Water Percolating thru Seal

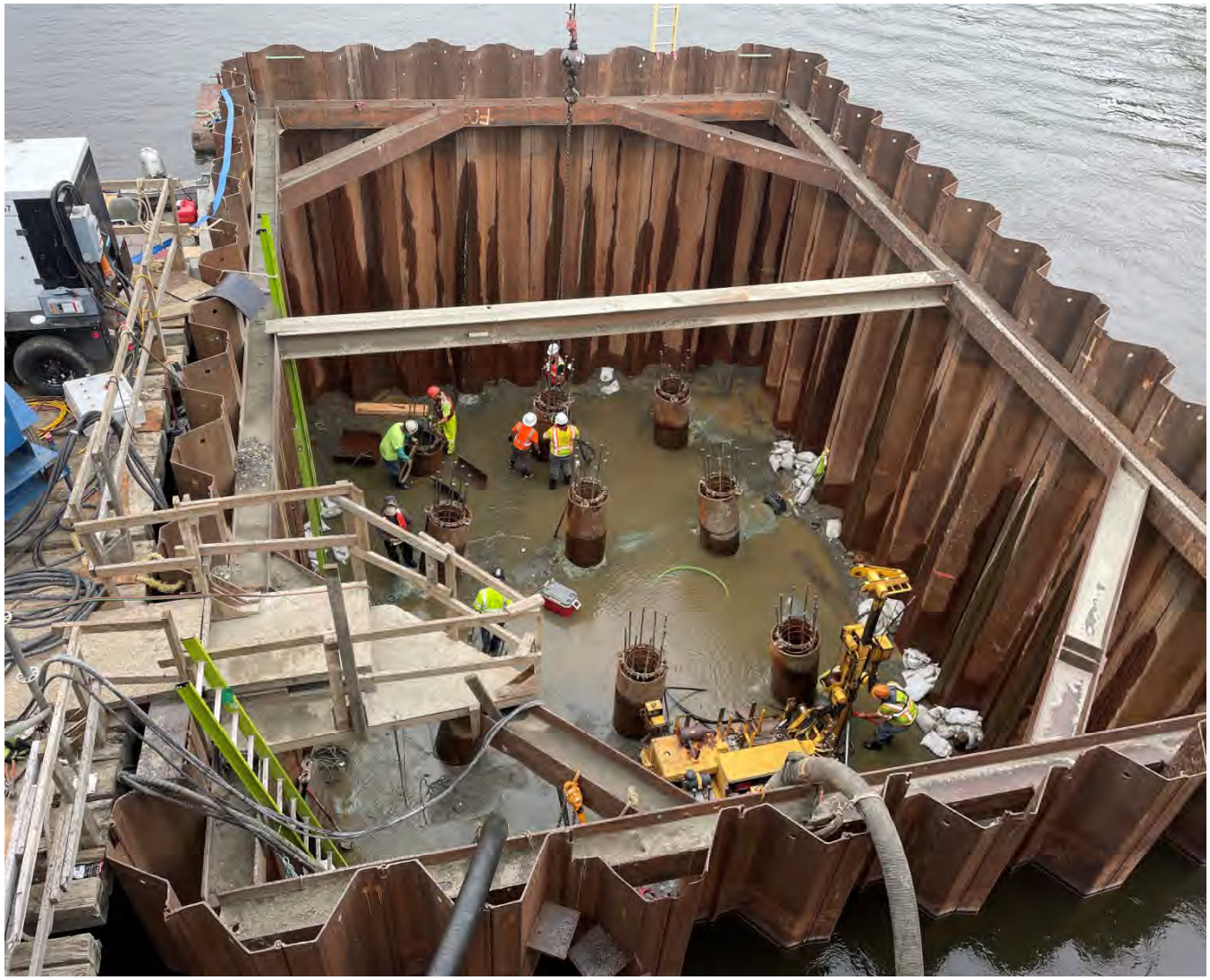
Dewatered
5/15/23

CSL Testing
5/31/23

Response:

- CSL Testing & Coring
- Engineering Review for Stability
- Conservative restart to avoid failure

Seal Cores 7/27/23



- Footer Pour Started 8/24/23…
- Bubbles Observed Downstream & Pour Stopped

- Resumed Balance of Pour 8/30/23
- Finished 4 Months After Seal Poured

Flooding July ’23…Lots of Debris & Some Boats from The Marina!!!

Takeaway: River conditions present high uncertainty

Collaboration Enabled Schedule Recovery

- Pier 1 delays brought Design & Construction teams together
- Aligned ideas to adjust sequencing & advance work
- Precast panels extended to VT & accelerated
- Deck pours re-sequenced for efficiency
- Parallel work activities approved


December 2021


February 2022


June 2022


September 2022


December 2022


February 2023


May 2023


July 2023


November 2023


February 2024


May 2024


July 2024

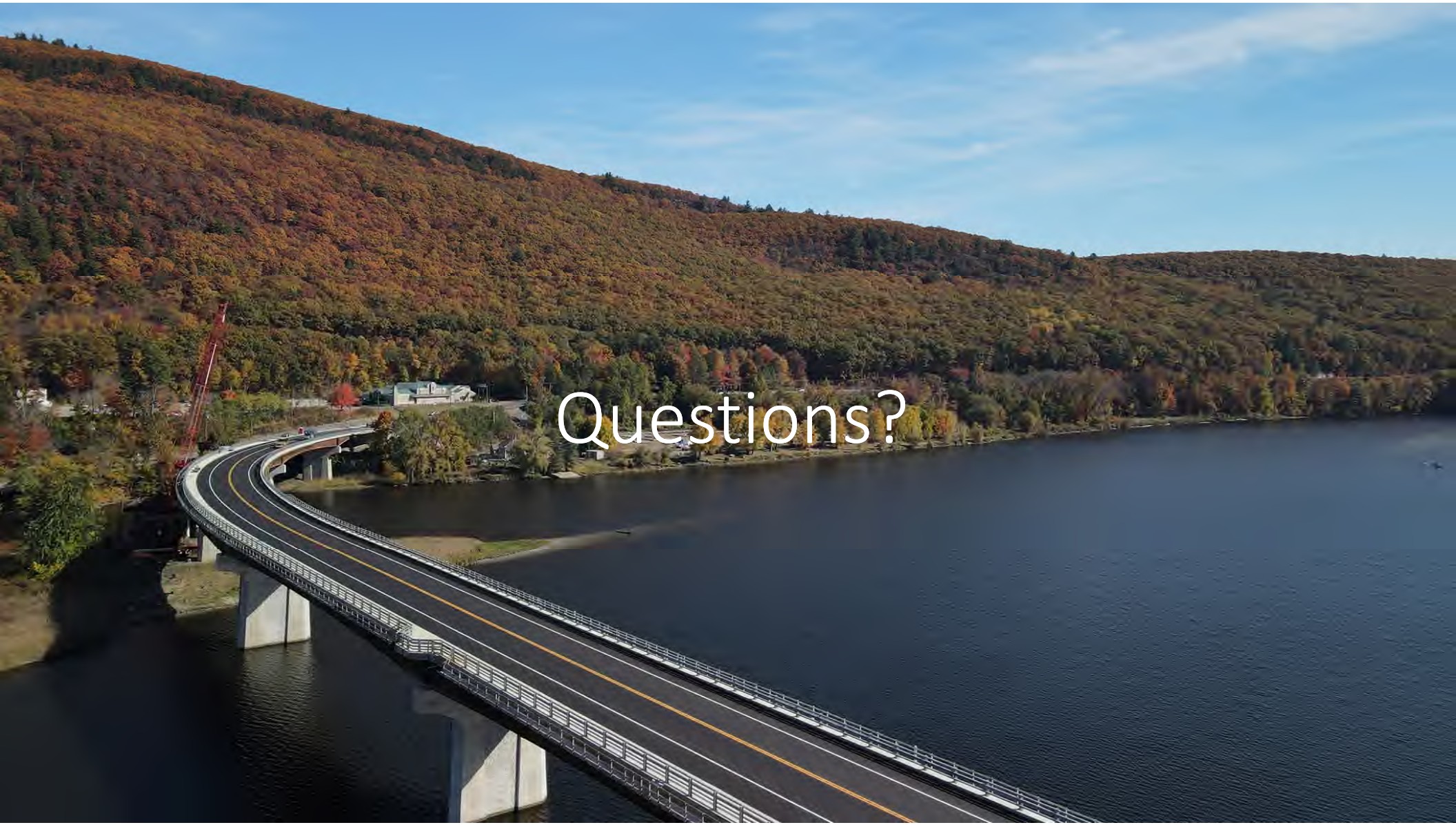

October 2024


December 4, 2024 – Opening Day!

June 2025

Project Completion – Successful Delivery!!!

- Multiple major challenges overcome
- Delivered bridge opening 5 weeks beyond original completion date
- Special Thanks to:
  - NHDOT: Mark Moran, Jared Hansen, Charlie Lawrence (John Turner Consulting), Steve Lowe, Jeremy Guyette, Deidra Benjamin, Nickie Hunter, Tim Chapman, Bill Saffian, and countless other support staff
  - VTRANS: Gary Laroche and the VTRANS team
  - VHB: Kevin Daigle and staff
  - McFarland Johnson: Sam White and staff
  - Major Sub's & Suppliers: Bazin Brothers, All States, CWS Fence, East Coast Signal, Carroll Concrete, Casco Bay Steel, J.P. Carrara Precast, Rebars & Mesh, Skyline Steel


Questions?